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A gate dielectric containing  $\text{LaAlO}_3$  and method of fabricating a gate dielectric contained  $\text{LaAlO}_3$  produce a reliable gate dielectric having a thinner equivalent oxide thickness than attainable using  $\text{SiO}_2$ . The  $\text{LaAlO}_3$  gate dielectrics formed are thermodynamically stable such that these gate dielectrics will have minimal reactions with a silicon substrate or other structures during processing. A  $\text{LaAlO}_3$  gate dielectric is formed by evaporating  $\text{Al}_2\text{O}_3$  at a given rate, evaporating  $\text{La}_2\text{O}_3$  at another rate, and controlling the two rates to provide an amorphous film containing  $\text{LaAlO}_3$  on a transistor body region. The evaporation deposition of the  $\text{LaAlO}_3$  film is performed using two electron guns to evaporate dry pellets of  $\text{Al}_2\text{O}_3$  and  $\text{La}_2\text{O}_3$ . The two rates for evaporating the materials are selectively chosen to provide a dielectric film composition having a predetermined dielectric constant ranging from the dielectric constant of an  $\text{Al}_2\text{O}_3$  film to the dielectric constant of a  $\text{La}_2\text{O}_3$  film. In addition to forming a  $\text{LaAlO}_3$  gate dielectric for a transistor, memory devices, and information handling devices such as computers include elements having a  $\text{LaAlO}_3$  gate electric with a thin equivalent oxide thickness.

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